

In re: Gerald H. Negley  
Serial No. 10/811,752  
Filed: March 29, 2004  
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**AMENDMENTS TO THE DRAWINGS:**

Please cancel the "New Sheet" of drawings including Figures 5 and 6 as presented with Applicant's Amendment dated June 15, 2006.

Please amend the Drawings by entering the attached "New Sheet" of drawings including new Figures 5 and 6.

**Remarks**

This is in response to the final Office Action mailed August 22, 2007, and the Advisory Action in the above-referenced application. Claims 6 and 19-44 have been cancelled without prejudice or disclaimer to Applicant and the filing of a divisional application thereon as being drawn to a non-elected invention. Claims 1-5 and 7-18 are currently pending.

Claim 18 is amended to correct an apparent typographical error in the formula of the recited p-type GaN layer noted by the Examiner. This amendment does not present new issues for consideration but merely corrects an apparent typographical error. Applicant accordingly respectfully requests entry of the amendment.

Applicant notes with appreciation the Examiner's indication that Claim 12 would be allowable if rewritten into independent form. Claim 12 is rewritten into independent form to advance consideration of this claim, and without prejudice or disclaimer to Applicant. This amendment does not present new issues for consideration by the Examiner but merely presents a dependent claim in independent form. Applicant accordingly respectfully requests entry of this amendment as well and an indication of the allowability of Claim 12.

The Examiner objects to new Figures 5, 6, and 7 and the corresponding amendments to the specification presented with Applicant's Amendments filed June 15, 2006, and January 22, 2007. Applicant hereby requests cancellation of the new drawing sheet presented with the Amendment dated June 15, 2006, and respectfully requests entry of new Figures 5 and 6 presented herewith.

New Figures 5 and 6 and the corresponding amendments to the specification do not violate the new matter rule. Support for Figures 5 and 6 can be found in the specification as filed, including claims 11, 12 and 13. Accordingly, the amendments merely clarify or complete the original disclosure. Insertions by way of amendment in the description or drawing, or both, of a patent application are permissible if they amplify and explain what was already reasonably indicated to be within the invention. The proposed new drawings do not disclose an invention not previously described in the present application but rather simply

clarify the prior disclosure and thus cannot be treated as new matter. Applicant respectfully requests entry of new Figures 5 and 6.

Claims 1, 3-5, 8 and 10 are rejected under 35 USC Section 103(a) as unpatentable over Touchy (U.S. Patent No. 3,925,121) in view of Ogihara et al. (U.S. Patent No. 5,700,714, hereinafter Ogihara). Applicant respectfully traverses this rejection for the reasons of record.

Applicant also offers the following additional comments. Touchy and Ogihara not only do not teach or suggest the claimed invention and lack the requisite motivation to make the proposed combination. The various components of the devices differ significantly in function, such that one skilled in the art would not make the modification proposed by the Examiner because such a combination would not work in the manner intended by the respective patents and further would change the principle of operation of the device being modified.

The cap of Ogihara is formed of a material that blocks the passage of atoms of the semiconductor substrate compound, such as Ga. An exemplary capping layer material is aluminum nitride. Column 3, lines 43-50. Yet, Touchy lists silicon dioxide as a material through which a Group III element (such as Ga) will diffuse. Accordingly, when considering the teachings of the patents in their entirety for all that they fairly teach, the skilled artisan would at best select an aluminum nitride cap for the Touchy device, and not a silicon dioxide layer, because Ogihara states that the cap blocks the passage of Ga, and Touchy states that silicon dioxide is a material that allows the passage of Group III elements.

Touchy and Ogihara use functionally distinguishable components and materials to achieve opposite results. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). For this reason as well, Applicant respectfully submits that there is no motivation or suggestion to combine the teachings of these disparate patents, and respectfully requests withdrawal of this rejection.

Claims 2, 9, 11 and 13 are rejected under 35 USC Section 103(a) as obvious over Touchy in view of Ogihara and further in view of Edmond et al. (U.S. Patent No. 5,523,589, hereinafter Edmond; Claims 2 and 8); Iguchi et al. (U.S. Patent No. 6,214,708, hereinafter Iguchi; Claim 9); and Nobori et al. (U.S. Patent No. 6,291,328, hereinafter Nobori; Claims 11 and 13). Applicant respectfully traverses these rejections for the reasons of record.

Claims 1, 2, 7 and 14-18 are rejected under 35 USC Section 103(a) as being unpatentable over Omi et al. (U.S. Patent No. 6,549,552, hereinafter Omi) in view of Touchy and Ogihara. Applicant respectfully traverses this rejection as well for the reasons of record. Omi does not teach or suggest a diffusion doping process. As previously noted, the Omi device includes various layers that are already doped prior to application to the substrate. Column 5, lines 17-23. Accordingly, there is no motivation to add yet another layer, much less a diffusion layer, because the various layers of the Omi device already include dopant materials. Indeed, one skilled in the art would avoid the use of additional unnecessary layers because of the resultant increased material costs and processing times. Further, Omi certainly does not teach or suggest the addition of still yet another layer, namely, a silicon dioxide layer, underlying a diffusion layer.

In view of the foregoing, Applicant submits that Claims 1-5 and 7-18 are patentable and respectfully requests withdrawal of the rejections of record. Applicant respectfully submits that the present application is in condition for allowance, which action is respectfully solicited. Should the Examiner have any questions regarding the foregoing, it is respectfully requested that the Examiner contact the undersigned at his convenience to expedite examination and allowance of this matter.

It is not believed that extensions of time or fees for net addition of claims are required beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee

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required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 50-0332.

Respectfully submitted,

/s/ Melissa B. Pendleton  
Reg. No. 35,459

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**Summa, Allan & Additon, P.A.**  
11610 North Community House Road, Suite 200  
Charlotte, NC 28277-2162  
Telephone: 704-945-6700  
Facsimile: 704-945-6735  
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